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The Graft Polymerization of Vinyl Compound onto a Polyvinyl Alcohol Fiber

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Kogyo Kagaku Zasshi (Journal of the Chemical Society of Japan, Industrial Chemistry Section), **63**, 1527 (1960)

Some vinyl compounds such as methylmethacrylate (MMA), styrene, acrylonitrile were graft co-polymerized onto polyvinyl alcohol (PVA) fibers and their heat-treated or formalized ones by CO^{60} γ-ray irradiation or a chemical method.

A large amount of styrene and MMA could be graft co-polymerized although acrylonitrile could be done only to 20–30 percents as weight increase onto PVA fibers.

These graft polymerization procedures could be performed by several methods without lowering the fiber tensile strength, although it became lower when computed on the basis of the unit cross section of the fiber, because the cross section of the fiber increases with the proceeding of the graft co-polymerization.

It was found that some favorable properties may be imparted to PVA fibers by these treatments.

The thermoplasticity of PVA fibers would be greatly improved by the graft co-polymerization of a vinyl compound such as styrene or MMA from which thermoplastic high molecular weight compounds are produced.

The elastic recovery of PVA fibers may also be improved by them, especially in a low elongation region by heat-drawing after the graft copolymerization.

Some other properties of graft co-polymerized PVA fibers were examined and discussed concerning their practical uses.

The Preparation of Some New Synthetic Fibers from Polyvinyl Alcohol by Mixed Emulsion Spinning

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Nihon Kagakusen-i Kenkyusho Koenshu (Reports of the Research Institute of Chemical Fibers, Kyoto University), **17**, 39 (1960)

It was found that polyvinyl alcohol (PVA) aqueous solution in which contains a large amount of the emulsion of polyacrylonitrile (PAN), polyvinyl chloride (PVC), polyethylene (PE), polyvinyl acetate (PVAC), polystyrene (PS), *etc.* is spinnable into sodium sulfate saturated aqueous solution almost in the same way as in a pure PVA aqueous solution, if the mixed emulsion solution is stable during the spinning process.

The mixed ratio of these emulsion polymers to PVA could widely be changed from 0 to 1, in special case beyond 3.

Various kinds of a new mixed component fiber which is composed of PVA and PAN, PVC, PE, PVAc, PS, *etc.* are prepared by this emulsion spinning and also